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# Interventions to enhance effective communication during over-the-counter consultations in the community pharmacy setting: A systematic review

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ABSTRACT

*Background:* Easy access to effective over-the-counter (OTC) treatments allows self-management of some conditions, however inappropriate or incorrect supply or use of OTC medicines can cause harm. Pharmacy personnel should support consumers in their health-seeking behaviour by utilising effective communication skills underpinned by clinical knowledge.

*Objective:* To identify interventions targeted towards improving communication between consumers and pharmacy personnel during OTC consultations in the community pharmacy setting.

*Methods:* Systematic review and narrative analysis. Databases searched were MEDLINE, EMBASE, Psycinfo, Cochrane Central Register and Cochrane Database of Systematic Reviews for literature published between 2000 and 30 October 2014, as well as reference lists of included articles. The search was re-run on 18 January 2016 and 25 September 2017 to maximise the currency. Two reviewers independently screened retrieved articles for inclusion, assessed study quality and extracted data. Full publications of intervention studies were included. Participants were community pharmacy personnel and/or consumers involved in OTC consultations. Interventions which aimed to improve communication during OTC consultations in the community pharmacy setting were included if they involved a direct measurable communication outcome. Studies reporting attitudes and measures not quantifiable were excluded. The protocol was published on Prospero Database of Systematic Reviews.

*Results:* Of 4978 records identified, 11 studies met inclusion criteria. Interventions evaluated were: face-to-face training sessions (n = 10); role-plays (n = 9); a software decision making program (n = 1); and simulated patient (SP) visits followed by immediate feedback (n = 1). Outcomes were measured using: SP methodology (n = 10) and a survey (n = 1), with most (n = 10) reporting a level of improvement in some communication behaviours.

*Conclusion:* Empirical evaluation of interventions using active learning techniques such as face-to-face training with role-play can improve some communication skills. However interventions that are not fully described limit the ability for replication and/or generalisability. This review identified interventions targeting pharmacy personnel. Future interventions to improve communication should consider the consumer's role in OTC consultations.

## 1. Introduction

Many countries reclassify prescription medicines as over-the-counter (OTC) medicines to increase public access and reduce national drug expenditure. OTC medicines have also been reclassified to reduce demand on health service providers, including general practice and emergency departments.[1–4] In addition, self-management with OTC medicines can increase personal empowerment and facilitate access to effective treatments.[2] The inappropriate or incorrect supply or use of OTC medicines can, however, cause harm.[2,5] As such, consumers who seek access to OTC medicines from community pharmacies should be supported in their health-seeking behaviour by pharmacy personnel.

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Pharmacy personnel engaging in OTC consultations require clinical skills underpinned by clinical knowledge. Clinical knowledge forms the foundation for understanding what information needs to be gathered from the consumer and how to cognitively process the information to formulate a course of action that will facilitate an appropriate outcome for the consumer. For these clinical skills to be effective, pharmacy personnel must utilise effective communication skills – both verbal and non-verbal. This may include developing rapport, engaging the consumer, structuring the explanations according to the needs of the consumer and use of open ended questions. Increasing the amount of quality information exchange during OTC consultations is significantly associated with positive outcomes such as appropriate medicine supply or referral.[6–9] There is substantial evidence, however, that the management of the diverse range of OTC enquiries encountered in community pharmacies is sub-optimal and that this is mainly due to inadequate information gathering and/or advice or information provision by pharmacy personnel.[6,10–14]

This literature review forms part of a larger study which aims to develop, implement and evaluate an intervention to enhance OTC consultations between pharmacy personnel and consumers in community pharmacies. The review will be used to inform the development of the intervention.

*Objective*: To identify interventions targeted towards improving communication between consumers and pharmacy personnel during OTC consultations in the community pharmacy setting.

## 2. Methods

A systematic literature review was performed according to standard methods. The review protocol was published on PROSPERO.[15]

### 2.1. Definitions

For the purpose of this review, the definition of a community pharmacy was a property registered as a pharmacy which was staffed by one or more qualified pharmacists. Over-the-counter (OTC) medicines were defined as medicines that are supplied without a prescription from a community pharmacy. An OTC consultation was defined as a health request, not associated with a prescription, for the consumer themselves or on someone else's behalf. This could have been a request for a specific product by name or for advice about treatment of a symptom or condition. A consumer was defined as a person visiting the community pharmacy for an OTC request.

Study designs were defined as: randomised controlled trial (RCT) where participants were randomly allocated to an intervention or control group, controlled trials where a control group was used but random allocation was not reported, and before-and-after studies where outcomes were measured pre- and post-intervention.

### 2.2. Data sources

An information specialist from the University of Aberdeen with expertise in conducting systematic reviews was consulted in the development of the search strategy. Databases searched were MEDLINE, EMBASE, Psycinfo, Cochrane Central Register and Cochrane Database of Systematic Reviews for literature published between 2000 and 30 October 2014 using a combination of Medical Subject Heading (MeSH) terms and text words. The search was re-run on 18 January 2016 and 25 September 2017 to maximise the currency of this review. Authors of conference abstracts that met the inclusion criteria were contacted to ascertain if the study had subsequently been published in full. Supplementary search methods were used, including scanning reference lists of all full-text articles that met the inclusion criteria and a search for relevant theses using the ProQuest database. In addition, a request for relevant publications was posted on ResearchGate from 18 December 2014 until 12 May 2015.

Search terms and strategy are listed in Supplementary file 1.

#### 2.2.1. Inclusion criteria

*2.2.1.1. Studies*. Full publications of intervention studies. No other limits regarding study design were applied. No limits were applied for language and non-English publications were translated.

*2.2.1.2. Participants*. Participants were community pharmacy personnel (pharmacist and non-pharmacist) and/or consumers involved in OTC consultations. No restrictions were imposed on the age of study participants.

*2.2.1.3. Interventions*. Interventions which aimed to improve communication during OTC consultations in the community pharmacy setting were included.

*2.2.1.4. Outcomes*. Interventions were included if they involved a direct measurable communication outcome. Examples of these measures included: the number of closed and/or open questions asked by pharmacy personnel; types of questions asked (general or specific); information elicited; and, prompted/unprompted consumer information seeking/provision.

Eligibility was assessed using independent duplicate screening (LS, KW) with disagreements being resolved by discussion and consensus.

#### 2.2.2. Exclusion criteria

Studies reporting attitudes and measures that were not quantifiable were excluded.

#### 2.2.3. Data extraction

A data extraction tool was developed and underwent duplicate independent testing (LS, KW) using 3 articles randomly selected from included articles. Disagreements between the 2 reviewers were discussed and resolved and the data extraction tool subsequently refined. Independent duplicate abstraction was undertaken for all included manuscripts. Disagreement was resolved by consensus and involvement of a third researcher when required (LH). Information extracted included the study design and characteristics of the intervention such as the mode of delivery, duration, content, theoretical underpinning, setting and follow-up. The communication outcome measures were noted with how they were measured and if the measurement method had been validated. The outcome findings, number of participants, their age range and if they were pharmacists or pharmacy assistants were recorded. Information on sampling and how study conditions were assigned was extracted and for RCTs also randomisation and blinding information.

#### 2.2.4. Risk of bias and quality of reporting

Independent duplicate risk of bias assessment was undertaken using a checklist developed from the Cochrane Collaboration Risk of Bias tool[16] and the Template for Intervention Description and Replication (TIDieR)[17] for quality of reporting.

#### 2.2.5. Data analysis

Due to the heterogeneity of methods, the results are presented as a narrative analysis and reported using the format recommended by the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) statement.[18]

## 3. Results

The search strategy identified 7326 records of which 2348 duplicates were removed resulting in 4978 records (Fig. 1). After excluding 4950 records through the title and abstract screening, 29 full-text articles were retrieved for further evaluation. One article identified in the supplementary search was found to be an additional report on a study

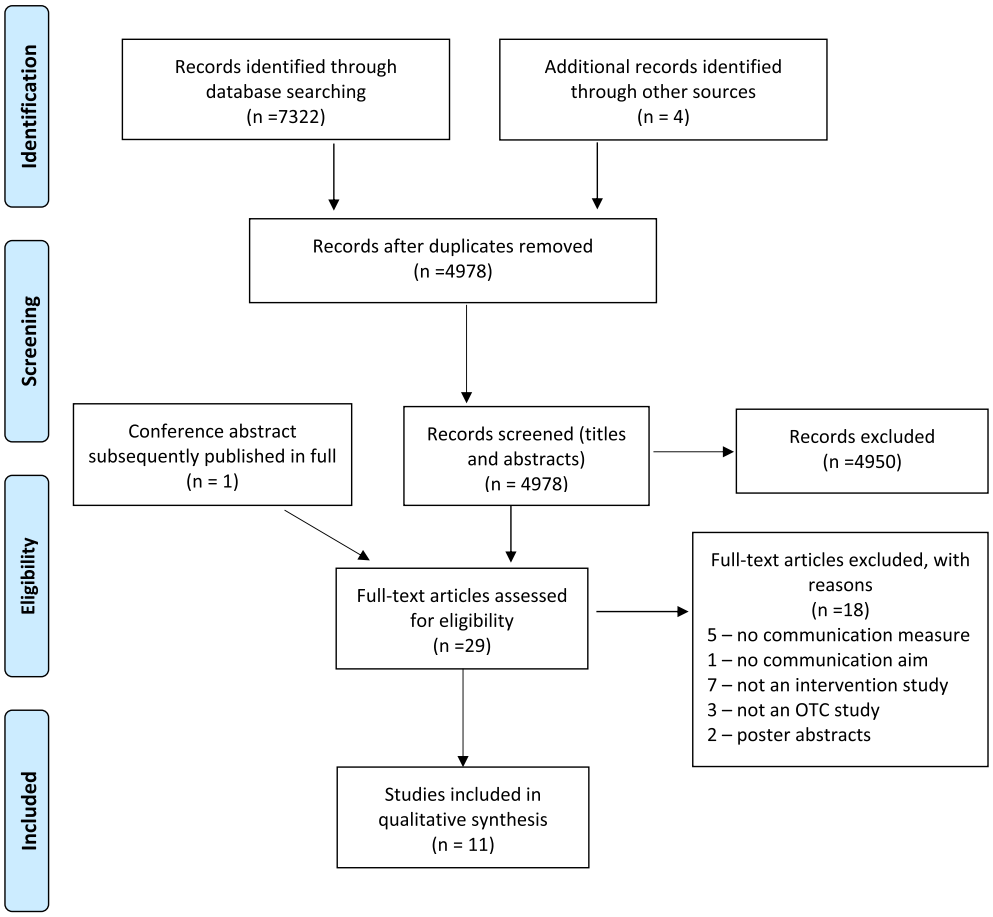


**Fig. 1.** PRISMA flow-chart of study selection process.

already included and was therefore excluded.[19] The authors of one conference abstract provided information regarding the subsequent full publication which was included in the full text assessment for eligibility. Eleven articles were identified as meeting the inclusion criteria (Table 1), comprising RCTs (n = 6),[20–25] controlled trial (n = 1)[26] and before-and-after studies (n = 4)[27–31] from Germany (n = 3),[23,26,29] Australia (n = 2),[22,30,31] Scotland (n = 2)[20,24] and one each from the United States of America,[27] Switzerland,[21] Vietnam[28] and Thailand.[25] One study[26] was published in German and was translated into English for the review by two Master of Pharmacy students who were studying in English with German as their first language.

All studies incorporated multiple components to the interventions (Table 1). Interventions evaluated were: face-to-face training sessions (n = 10)[21–30]; role-plays (n = 9)[21,22,24–28,30]; a software decision making program (n = 1)[29]; and simulated patient (SP) visits followed by immediate feedback (n = 1).[20] Outcomes were measured using: SP methodology (n = 10)[20–22,24–30] and a survey (n = 1),[23] with most (n = 10)[21–30] reporting a level of improvement in some communication behaviours.

### 3.1. Quality of reporting and risk of bias

Six of the 11 included studies were RCTs.[20–25] An additional study[26] claiming to be an RCT reported that as "random assignment to groups was not possible" study conditions were allocated sequentially. Therefore, for the purposes of this review, this study was categorised as a controlled trial[26] (Table 1). Four studies provided justification for the sample size[20,21,24,25] and of these 3 achieved the sample size.[20,21,25] Risk of bias was variable with none of the RCTs documenting all the Cochrane Risk of Bias elements (Table 2).

In the controlled trial,[26] participants were sequentially assigned to the intervention and control groups and were blinded to their allocation. The method for determining sample size was unclear. Telephone calls from SPs were used to measure outcomes. During the SP telephone calls, one researcher was the SP, noting down responses on a checklist. Another researcher listened in and also recorded the responses thus increasing the reliability of the data collected. Reasons for non-completion were clearly documented.

A further 9 studies used SPs to measure outcomes. In one study the SP interaction was overt and not audio-recorded,[29] in 5 studies there was no audio-recording of SP visits[22,25,27,28,30] and in the remaining 3 studies the SP visits were audio recorded,[21,24,32] thereby reducing recall bias.

The quality of reporting of the interventions was variable when assessed against the TIDieR Checklist[17] (Table 3). One study[24] reported 10 checklist items, while a second study,[20] involving some of the same authors, reported 9 of the 11 applicable items. Most studies[20–22,24,26–29] described the materials used in interventions with about half reporting who[20,24,28–30] delivered the intervention and where[20,24,26,29,30] it was delivered. A single study[24] reported if modifications to the intervention were made during the study. Six studies[20–22,24,28,29] described the plans for determining the fidelity of the intervention, with none reporting if the plans were followed through.

#### 3.1.1. Intervention characteristics

The UK Medical Research Council recommends using theory to systematically develop complex interventions and to fully describe the intervention for implementation and replication.[33] Five[20–22,24,27] of the 11 interventions were underpinned by one or more theories and included Self Efficacy Theory,[27] Stages of Change,[21] Health Beliefs Model,[21] the Social Cognitive Theory,[22] Agenda-Led Outcome Based Analysis (ALBOA) model of feedback,[20] Theory of Planned Behaviour[24]

**Table 1**
Studies meeting inclusion criteria.

| Publication | Study design | Country | Intervention types | Main focus of intervention. | Behaviour change technique [32, 33] | Follow-up duration | Participant Numbers | Pharmacist: P Pharmacy assistant: PA | Communication outcome measure | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | What was measured? | Methodology | Outcome(s) |
| De Almeida Neto et al., 2000[22] | RCT | Australia | Face-to-face training; role-play. | Education on the Stages of Change model of behaviour change and consultation protocols for interactions with consumers who are repeat analgesic users. | • Instruction<br>• Feedback<br>• Practise | 26 weeks | 16 intervention; 8 control | P | Whether: potential for misuse correctly identified; alternate medication discussed; medicine dose, interactions and side effects were discussed; referral to doctor was made. | SP[a]-covert | Significant improvement in:<br>• Discussions about alternative analgesic ($p < .0001$) and dosage information ($p < .0001$)<br>No significant changes in:<br>• Discussions about alcohol interactions; previous use; referral to doctor<br>Initial significant decrease, then started to improve over subsequent SP visits in<br>• Discussions about drowsiness and driving risk. |
| Krishnan and Schaefer, 2000[23] | RCT | Germany | Face-to-face training; role-play. | Peptic disorders. | • Instruction<br>• Practise | None | Unclear | P | The number of information gathering questions and items of advice provided. | Consumer completed survey. | Significant improvement in:<br>• quantity of questioning and advice-giving by intervention group than control (median 9 items vs 7 items, $p = .01$).<br>• number of information gathering questions (mean 3.4 vs 2.8; $p < .01$)<br>• Items of advice (mean 5.2 vs 4.5; $p < .01$). |
| Sigrist et al., 2002[21] | RCT | Switzerland | Face-to-face training; role-play. | Theoretical models of health behaviour and consultation protocols. | • Instruction<br>• Feedback<br>• Practise | 8 weeks | 85 intervention; unclear numbers in control group | P; PA | The number of information gathering and clinical questions, and items of advice provided. Whether open or closed questions were used. | SP[a]-covert | Significant improvement in intervention group compared with control in the mean total scores obtained at each visit time point post-training: visit 3 (p 0.013), 4 (p 0.01), 5 (p 0.06), 6 (p 0.01) and 7 (p 0.01). |
| Ratanajamit et al., 2002[25] | RCT | Thailand | Face-to-face training; role-play. | Emergency contraception (EC). | • Demonstration<br>• Instruction<br>• Practise | 5 months | Unclear | P; PA | The number of information gathering questions; provision of dose and items of advice; and supply of EC. | SP[a]-covert | Information gathering was incomplete in most cases in all groups at all times.<br>Significant increase in<br>• supply of EC and correct dosing advice in intervention group<br>• side effect advice given in intervention group at month 1 and in control group at month 3 |
| Watson et al., 2007[24] | RCT feasibility study | Scotland | Face-to-face training; role-play. | Communication skills training. | • Demonstration<br>• Instruction<br>• Feedback | 8 weeks | 15 intervention; 10 control | PA | The proportion of open questions and whether questioning was consistent with the WWHAM guideline. | SP[a]-covert | None of the differences between the groups for the main outcomes reached statistical significance. |

(*continued on next page*)

**Table 1** (*continued*)

| Publication | Study design | Country | Intervention types | Main focus of intervention. | Behaviour change technique [32, 33] | Follow-up duration | Participant Numbers | Pharmacist: P Pharmacy assistant: PA | Communication outcome measure | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | What was measured? | Methodology | Outcome(s) |
| Watson et al., 2009[20] | RCT Feasibility study | Scotland | Immediate feedback provided by either SP or a pharmacy educator following covert SP visit | Ibuprofen, omeprazole, indigestion advice. | • Feedback<br>• Practise | 6 weeks | 30 intervention; 30 control. | P; PA | From number of information gathering questions and items of advice provided a total WWHAM score was calculated. | SP[a]-covert | SP visits with immediate individualised feedback delivered by either SPs or pharmacy educators showed no difference in total WWHAM score between study groups at any time. |
| Laven et al., 2014[26] | Controlled trial | Germany | Online training; face-to-face training; role-play. | Common cold and consultation protocol. | • Instruction<br>• Practise | 13 weeks | 27 intervention; 29 control | P | Number of information gathering questions and items of evidence based advice provided. Consumer inclusion in decision making. | SP[a]–covert by telephone | Intervention group was significantly better than control over all questions (p-value < .001).<br>Intervention group significantly improved for evidence based advice provision and consumer inclusion in decision making. |
| Martin and Chewning, 2011[27] | Before and after | United States | Face-to-face training; role-play. | Smoking cessation five A's protocol. | • Instruction<br>• Feedback<br>• Practise | 1 year | 25 | P | Number of items of "5As: Ask; Assess; Advise; Assist; Arrange" addressed. | SP[a]-covert | Scores improved significantly in the two scenarios presented by the SP (p < .02; p < .004) |
| Schneider et al., 2010[30] | Before and after | Australia | Face-to-face training, role-play and health promotion activity | Appropriate supply of asthma inhaler devices and asthma inhaler technique. | • Instruction<br>• Feedback<br>• Practise | 2 weeks | 744 | P; PA | The number of information gathering questions and items of advice provided. | SP[a]-covert | The intervention group had a significantly lower number of SP visits<br>• involving salbutamol supply without any patient assessment compared to control (8% vs 23%; p = .009)<br>• without items of advice provided (48% vs 75%; p < .001)<br>and a higher<br>• mean number of assessment questions asked (3.33 vs 2.13; p < .001), and<br>• items of advice provided (1.14 vs 0.52; p < .001) |
| Bertsche et al., 2012[29] | Before and after | Germany | Face-to-face training on pharmacy decision support software program | Allergic rhinitis. | • Demonstration<br>• Instruction<br>• Feedback<br>• Practise<br>• Prompts/cues | None | 50 | P | Number of mandatory questions asked (according to the Federal Union of German Associations of Pharmacists). | SP[a]–overt | Significant improvement in<br>• mandatory questions asked to confirm appropriateness of self-medication & identify symptoms (p < .001)<br>• recommendations concerning treatment using nasal sprays (p < .001) |
| Pham et al., 2013[28] | Before and after | Vietnam | Face-to-face training; role-play. | Childhood diarrhoea. | • Instruction<br>• Practise<br>• Social support | 4 years | Baseline: 220<br>End-line: 250 | P; PA | Asking questions about:<br>• accompanying diarrhoea symptoms | SP[a]-covert | Significant improvement in |

(*continued on next page*)

**Table 1** (*continued*)

| Publication | Study design | Country | Intervention types | Main focus of intervention. | Behaviour change technique [32, 33] | Follow-up duration | Participant Numbers | Pharmacist: P Pharmacy assistant: PA | Communication outcome measure | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | What was measured? | Methodology | Outcome(s) |
| | | | | | | | | | • weight of child.<br>Providing information about:<br>• ORS preparation & use<br>• signs of dehydration | | • inquiring about case before making recommendations ($p < .01$)<br>• providing consultations ($p < .05$), and<br>• referring clients to health facilities or practitioners ($p < .01$).<br>Significant improvements for<br>• counselling about home remedies and care (no p value provided) |

[a] Simulated patient (SP).

and Cognitive Behavioural Therapy technique.[24] Three studies[21,22,24] reported the rationale for the selected theory and how it was used in the development of the intervention.

Face-to-face training events which incorporated a knowledge component and a role-play component were used in 8[21–28] of the 11 studies. Typically, these consisted of a workshop which incorporated a knowledge section followed by role-play (Table 1). The knowledge component was either clinically-oriented or focussed on behaviour and communication skills. Specific clinical areas included topics such as smoking cessation,[27] emergency contraception,[25] dyspepsia,[23] and childhood diarrhoea.[28] Other workshops addressed more general skills development. These included developing an understanding of behaviour models,[21,22,24] the use of interview frameworks[22,26,27] and communication techniques designed to be flexible,[21,24] helping pharmacy personnel to use open-ended questions to assess consumers' responsiveness as well as to guide them through questioning.

One before-and-after study[30] reported the use of a training event but the content of this was determined at each intervention site and was therefore variable and not described. Another before-and-after study[29] utilised one-to-one training on the use of a software program to assist decision making for allergic rhino-conjunctivitis OTC enquiries by working through an algorithm. This was immediately followed by overt SP role-play assessment.

In one RCT[20] a different approach was undertaken whereby the intervention included provision of feedback immediately following a SP visit. Three SP visits were conducted: one baseline and 2 follow-up visits, with immediate feedback provided after visits one and two. Behaviour change was measured by comparing visit one (before any feedback) with visit three (after 2 sessions of feedback).

Duplicate coding of the behaviour change techniques[34,35] utilised in the interventions was performed and identified to be: demonstration of the behaviour; instruction on how to perform the behaviour; feedback on behaviour; behavioural practise/rehearsal; social support; and prompts/cues (Table 1). Between 2 and 5 behaviour change techniques were reported per intervention.

### *3.1.2. Outcomes*

Outcomes were assessed primarily with the use of SP visits to pharmacies where participants worked.[20–22,24,25,27,28,30] SP visits involved an enquiry which afforded the pharmacist or pharmacy assistant an opportunity to display communication skills relevant to the study aim. After the interaction the SP recorded what had occurred on a standardised form. For example, in a before and after study[27] pharmacists were trained to enhance smoking cessation interactions using the 5As technique: Ask; Assess; Advise; Assist; Arrange. The communication outcome measure was the SP record of the pharmacist's use of the 5As technique in the interaction. Changes in the scores before and after the training were analysed for significance (Table 1).

SP visits were used to measure changes in communication behaviour in 6[21,22,24,25,27,28] of the 8 studies involving a face-to-face training session with role-play. There was improvement with some communication outcome measures in these 6 studies with statistically significant improvements reported in 5 studies[21,22,25,27,28] (Table 1). A further study involving a workshop with role-play, measured communication after the intervention using SP telephone consultations. Significant improvements in some consultation elements were shown in the intervention group compared with the control group.[26] The intervention in the final RCT study involved face-to-face training with role-play and did not involve SPs.[23] Consumers visiting a pharmacy for help with dyspepsia or a specific medicine for dyspepsia were asked to complete a survey about the interaction immediately following the encounter with the pharmacist. A significant increase in the number of questions and advice-giving was shown in the intervention group compared with the control group.

One before-and-after study explored the effect of training on the use of Pharmacist Decision Support System software and assessed the effect

**Table 2**
Risk of bias of RCT (n = 6) and controlled trial studies (n = 1).

| | Sequence generation (selection bias) | Allocation concealment (selection bias) | Blinding of participants and personnel (performance bias) | Blinding of outcome assessment (detection bias) | Incomplete outcome data (attrition bias) | Selective reporting (reporting bias) | Other bias |
|---|---|---|---|---|---|---|---|
| de Almeida Neto *et al* 2000[22] | ? | + | ? | - | + | + | - |
| Krishnan *et al* 2000[23] | ? | + | - | ? | + | + | - |
| Ratanajamit *et al* 2002[25] | ? | + | + | ? | + | + | + |
| Sigrist *et al* 2002[21] | ? | + | - | + | ? | + | + |
| Watson *et al* 2007[24] | + | + | - | ? | + | + | + |
| Watson *et al* 2009[20] | ? | + | - | - | + | + | + |
| *Laven *et al* 2014[26] | - | - | + | + | + | + | + |

| | |
|---|---|
| Unclear risk of bias | ? |
| High risk of bias | - |
| Low risk of bias | + |

* As there was no random allocation in this study it was determined to be a controlled trial for the purpose of this review.

using the number of mandatory questions asked (according to the Federal Union of German Associations of Pharmacists) such as who the patient is, what they symptoms are, and how often they occur.[29] The trainer also acted as an SP and role-played a scenario immediately before and after the training. Significant increases were reported in the number of mandatory questions asked post-training.

A larger before-and-after study[30] involved a variable and unspecified education intervention and health promotion activity concerning salbutamol inhaler requests with the effects being measured by SP visits. Results (Table 1) showed that the number of visits in which salbutamol was supplied without any patient assessment was significantly lower in the intervention group, as was the number of visits without counselling. The mean number of assessment questions asked and counselling points provided per pharmacy visit were also significantly greater in the intervention group.

A pilot RCT[20] investigated the effectiveness of covert SP visits combined with immediate individualised feedback, delivered by either SPs or pharmacy educators. The Mann–Whitney test revealed no difference in total WWHAM[36] (Who is it for, What are the symptoms, How long have the symptoms been present, Any medication tried already, other Medication taken) score between the study groups at any time.

The effectiveness of the interventions in the 11 studies was evaluated at different time-points following the interventions (Table 1). Some were evaluated immediately after the intervention,[27,29,32] with many having successive SP visits over a period of months[21,22,24–28,30,32] (although the timeframe was often poorly reported). Only one study[28] conducted SP visits over an extended (4 year) period.

## 4. Discussion

This systematic review identified 11 interventions that were conducted with the aim of improving communication between pharmacy personnel and consumers during OTC consultations in the community pharmacy setting. The methods and quality varied and there was no consistent definition for good communication or consultation skills provided. All but one study[23] assessed changes in communication skills using SP methodology, which has been shown to be a valid method of measuring practice interactions between pharmacy personnel and consumers.[37,38] The other method used to assess communication skills was a survey of consumers.[23]

The researchers reported that the use of active learning through training using role-play, feedback and reflection was important for development of and improvement in communication skills. Active learning "involves students in doing things and thinking about the things they are doing".[39] It gained momentum as a method for enhancing learning in the 1990's[39–41] with recent research in pharmacy teaching and learning still finding the method effective in learning communication skills.[42,43] Studies identified in the review which used workshops to improve knowledge in a specific clinical area and also incorporated an active role-play component resulted in improved communication between pharmacy personnel and consumers. Significant improvements in communication were reported in 4[21,22,26,27] of the 5 studies where the focus of the workshop was not clinical knowledge, but rather communication skills and an understanding of models of health behaviour. Two of these studies did not present sample size calculations[22,26] and one used a purposive sample[27] making the

**Table 3**
The TIDieR checklist for included studies (n = 11).

| | | De Almeida Neto *et al*, 2000[22] | Krishnan and Schaefer, 2000[23] | Sigrist *et al*, 2002[21] | Ratanajamit *et al*, 2002[25] | Watson *et al*, 2007[24] | Watson *et al*, 2009[20] | Laven *et al*, 2014[26] | Martin and Chewning, 2011[27] | Schneider *et al*, 2010[30] | Bertsche *et al*, 2012[29] | Pham *et al*, 2013[28] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | BRIEF NAME | | | | | | | | | | | |
| 1 | Provide the name or a phrase that describes the intervention. | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| | WHY | | | | | | | | | | | |
| 2 | Describe any rationale, theory, or goal of the elements essential to the intervention. | Y | Y | Y | Y | Y | Y | ? | Y | Y | Y | Y |
| | WHAT | | | | | | | | | | | |
| 3 | Materials: Describe any physical or informational materials used in the intervention, including those provided to participants or used in intervention delivery or in training of intervention providers. Provide information on where materials can be accessed (e.g. online appendix, URL). | Y | ? | Y | ? | Y | Y | Y | Y | ? | Y | Y |
| 4 | Procedures: Describe each of the procedures, activities, and/or processes used in the intervention, including any enabling or support activities. | Y | ? | Y | Y | Y | Y | Y | ? | ? | Y | Y |
| | WHO PROVIDED | | | | | | | | | | | |
| 5 | For each category of intervention provider (e.g. psychologist, nursing assistant), describe their expertise, background and any specific training given. | ? | ? | ? | ? | Y | Y | ? | ? | Y | Y | Y |
| | HOW | | | | | | | | | | | |
| 6 | Describe the modes of delivery (e.g. face-to-face or by some other mechanism, such as internet or telephone) of the intervention and whether it was provided individually or in a group. | Y | ? | Y | Y | Y | Y | Y | Y | ? | Y | ? |
| | WHERE | | | | | | | | | | | |
| 7 | Describe the type(s) of location(s) where the intervention occurred, including any necessary infrastructure or relevant features. | ? | ? | ? | ? | Y | Y | Y | ? | Y | Y | ? |
| | WHEN and HOW MUCH | | | | | | | | | | | |
| 8 | Describe the number of times the intervention was delivered and over what period of time including the number of sessions, their schedule, and their duration, intensity or dose. | Y | ? | Y | Y | Y | Y | Y | Y | ? | Y | Y |
| | TAILORING | | | | | | | | | | | |
| 9 | If the intervention was planned to be personalised, titrated or adapted, then describe what, why, when, and how. | NA | NA | NA | NA | NA | NA | NA | NA | Y | NA | NA |
| | MODIFICATIONS | | | | | | | | | | | |
| 10 | If the intervention was modified during the course of the study, describe the changes (what, why, when, and how). | ? | ? | ? | ? | Y | ? | ? | ? | ? | ? | ? |
| | HOW WELL | | | | | | | | | | | |
| 11 | Planned: If intervention adherence or fidelity was assessed, describe how and by whom, and if any strategies were used to maintain or improve fidelity, describe them. | Y | ? | Y | ? | Y | Y | ? | ? | ? | Y | Y |
| 12 | Actual: If intervention adherence or fidelity was assessed, describe the extent to which the intervention was delivered as planned. | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? |

Y, if the item was reported
?, if information about the element was not reported/not sufficiently reported.
N/A if an item is not applicable for the intervention being described.

impact of these results difficult to determine. Only one study did not show significant improvements in communication, however this was a pilot study.[24] Role-play, feedback and reflection were also used with positive results in the intervention that used SPs to visit pharmacies covertly, then provide feedback to the staff member immediately afterwards.[20] These findings are consistent with literature reporting on the effectiveness of active learning techniques to enhance and maintain existing as well as develop new skills.[44,45]

Consultation skills have been taught to health professionals using a number of methods including the use of structured interview frameworks such as WHAMM (Who is the patient and what are the symptoms? How long have symptoms been present? Action taken. Medication being taken.),[36] the Calgary Cambridge Guide[46] and motivational interviewing techniques. These methods have been shown to be more effective when used with active learning techniques.[44]

The search for interventions to improve communication between pharmacy personnel and consumers during OTC consultations in the community pharmacy setting identified interventions in which the target participants were pharmacy personnel. However, the role of the consumer in the two way consultation process should also be considered. Consultations that involve a specific product request have been shown to involve less information exchange than consultations where consumers ask about management of a symptom.[47,48] While this may indicate a failure of pharmacy personnel asking questions with specific product requests, it might also indicate that consumers see these to be transactional interactions rather than consultations. Engaging the consumer in the consultation process, particularly when they request a specific product, may improve consultation outcomes.

In the UK's guidance for developing and evaluating complex interventions it is recommended that interventions are developed using the best available evidence and a sound theoretical basis.[33] Having a thorough theoretical understanding is essential for determining how the intervention causes change and resources have been developed to assist researchers to evaluate behaviour change.[34,49] The guidance also emphasises the importance of fully describing the intervention to facilitate evaluation and replication by others.[17] As the information from this review is to be used to inform the development of an intervention the quality of the reporting was of particular interest. Only 3 of the studies that were underpinned with theory provided details of how this was achieved.[21,22,24] Two of these attributed improved communication skills to the interventions delivered however details regarding components which were considered effective were not provided.[21,22] Fully describing these components to enable an understanding of the active constituents of the intervention and replication is essential but was not evidenced in these studies. Detailed information would also benefit future researchers by enabling them to identify previously tested intervention components that were effective to use as a basis for subsequent research. Equally, when ineffective intervention components are fully reported they can be avoided in future research, or investigated to determine why they were not effective. An analysis to determine the behaviour change techniques used in the included studies was performed. The interventions conducted were to educate (increase knowledge or understanding) and/or train (impart skills) pharmacy personnel.[34,35]

### 4.1. Strengths and limitations

This review was conducted using a systematic approach complying with the PRISMA statement.[18] The search strategy was comprehensive and used multiple supplementary search methods. Eligibility criteria were limited to studies that involved an intervention with a direct communication measure involving OTC enquiries in the community pharmacy setting.

Studies were not excluded based on risk of bias, quality, sample size or power and therefore the evidence presented here should be interpreted with caution.

## 5. Conclusion

There has been some empirical evaluation of interventions to enhance communication during OTC consultations. The use of face-to-face training with role-play has been shown to improve some communication skills however the active components of these interventions have not been fully described. Future research should endeavour to identify behaviour change techniques appropriate for interventions and provide a detailed account of the intervention to enable replication and/or generalisability.

All studies targeted pharmacy personnel with none targeting consumers. Future interventions to improve communication should consider all participants in OTC consultations.

## Conflicts of interest

Authors (M C Watson and R M Clifford) of this review article had authored papers that met the inclusion criteria for the review, however were not involved in the screening, data abstraction or appraisal processes.

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## Appendix A. Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.sapharm.2017.12.001.

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